



ELECTRICAL DATA SHEET

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1. RATING DETAILS

1.1	Frame size	BDAX 72-290ER
1.2	Terminal voltage	13.80 kV
1.3	Frequency	60 Hz
1.4	Speed	3600 rev/min
1.5	Power factor	0.850
1.6	Applicable national standard	IEEE C50.13
1.7	Rated air inlet temperature	15.0 °C
1.8	Rated output	70.528MW, 82.974 MVA

2. PERFORMANCE CURVES

2.1	Output vs air inlet temperature	H.E.P. 30867
2.2	Generator capability diagram	H.E.P. 30868
2.3	Efficiency vs output	H.E.P. 30869
2.4	Open and short circuit curves	H.E.P. 30870
2.5	V-curves	H.E.P. 30945
2.6	Permitted duration of negative sequence current	H.E.P. 1216

3. REACTANCES

3.1	Direct axis synchronous reactance, $X_d(i)$	240 %
3.2	Direct axis saturated transient reactance, $X'_d(v)$	24.6 % \pm 15 %
3.3	Direct axis saturated sub transient reactance, $X''_d(v)$	17.6 % \pm 15 %
3.4	Unsaturated negative sequence reactance, $X_2(i)$	22.4 %
3.5	Unsaturated zero sequence reactance, $X_0(i)$	12.0 %
3.6	Quadrature axis synchronous reactance $X_q(i)$	220 %
3.7	Quadrature axis saturated transient reactance $X'_q(v)$	30 %
3.8	Quadrature axis saturated sub transient reactance $X''_q(v)$	21 %
3.9	Short circuit ratio	0.45

Notes:

1. The electrical details provided are calculated values. Unless otherwise stated, all values are subject to tolerances as given in the relevant national standards.

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ELECTRICAL DATA SHEET - CONTINUATION

BDAX 72-290ER, 70.528 MW, 0.850 pf, 13.80 kV, 60 Hz

4. RESISTANCES AT 20°C

4.1	Rotor resistance	0.156 ohms
4.2	Stator resistance per phase	0.0028 ohms

5. TIME CONSTANTS AT 20°C

5.1	Transient O.C. time constant, T'_{do}	9.3 seconds
5.2	Transient S.C. time constant, T'_d	0.76 seconds
5.3	Sub transient O.C. time constant T''_{do}	0.05 seconds
5.4	Sub transient S.C. time constant, T''_d	0.04 seconds

6. INERTIA

6.1	Moment of inertia, WR^2 (See note 2)	970 Kg.m ²
6.2	Inertia constant, H	0.83 kW.secs/kVA

7. CAPACITANCE

7.1	Capacitance per phase of stator winding to earth	0.24 microfarad
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8. EXCITATION

8.1	Excitation current at no load, rated voltage	332 amps
8.2	Excitation voltage at no load, rated voltage	52 volts
8.3	Excitation current at rated load and P.F.	1040 amps
8.4	Excitation voltage at rated load and P.F.	213 volts
8.5	Inherent voltage regulation, F.L. to N.L.	40 %

Notes:

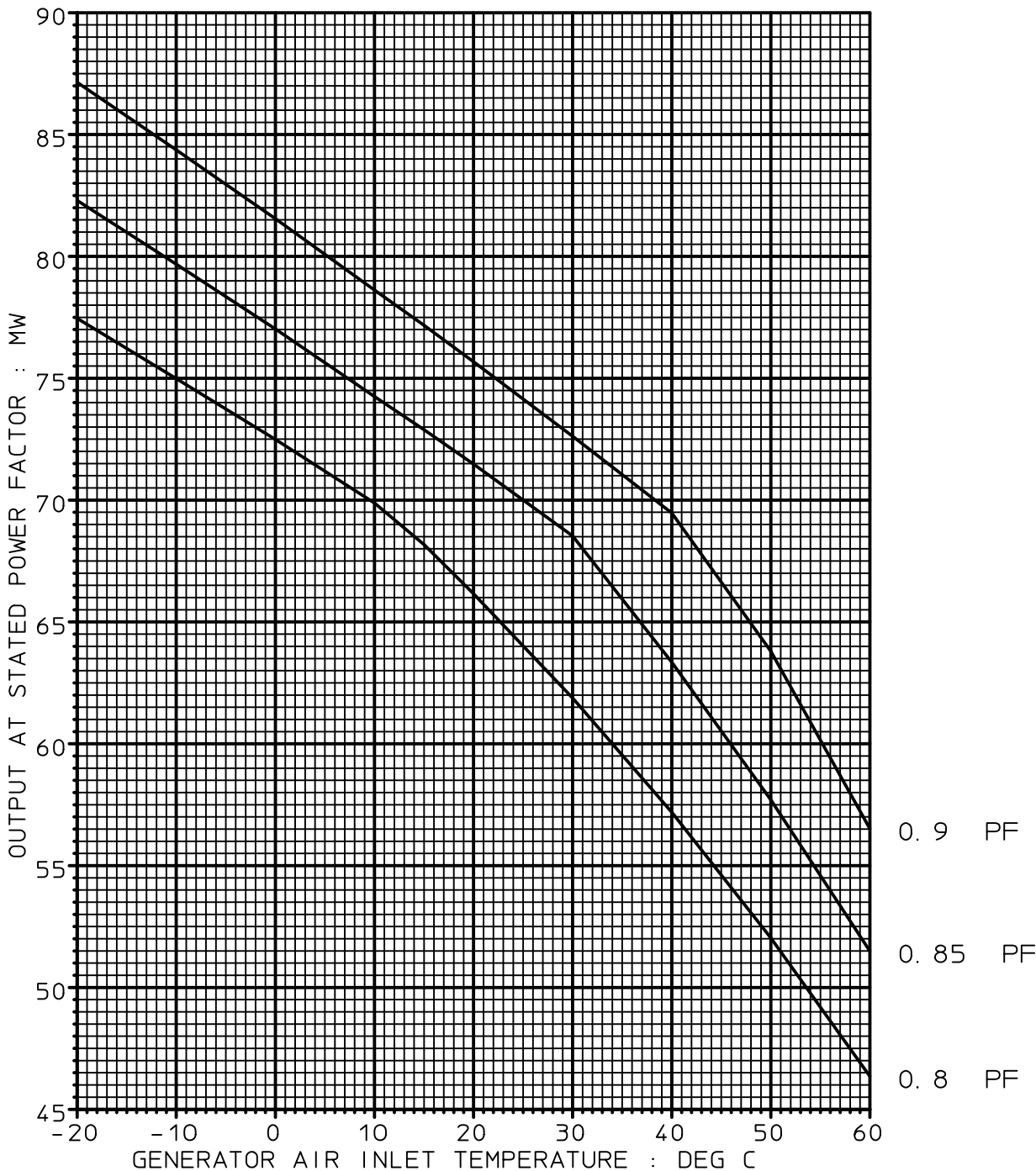
1. The electrical details provided are calculated values. Unless otherwise stated, all values are subject to tolerances as given in the relevant national standards.
2. The rotor inertia value may vary slightly with generator / turbine interface. In the event of conflict, the figure quoted on the rotor geometry drawing takes precedence.

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VARIATION OF GENERATOR OUTPUT WITH AIR INLET TEMP



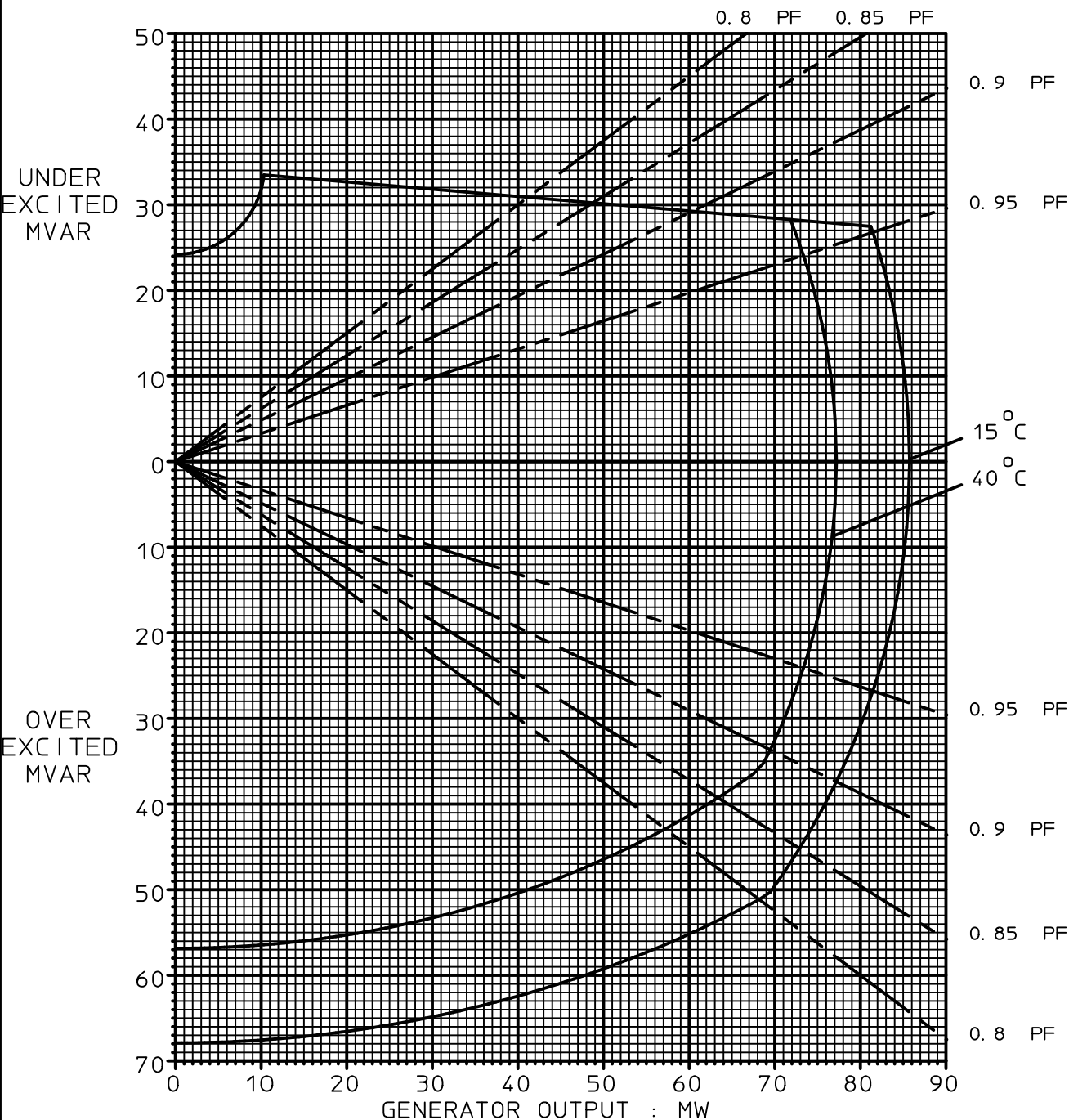
BDAX 72-290ER
13.80KV, 3 Ph, 60Hz.

Up to 1000 meters ASL

IN ACCORDANCE WITH
IEEE C50.13
Class B temperatures.

Total temperatures Stator 123 Deg C
Rotor 125 Deg C

GENERATOR CAPABILITY DIAGRAM



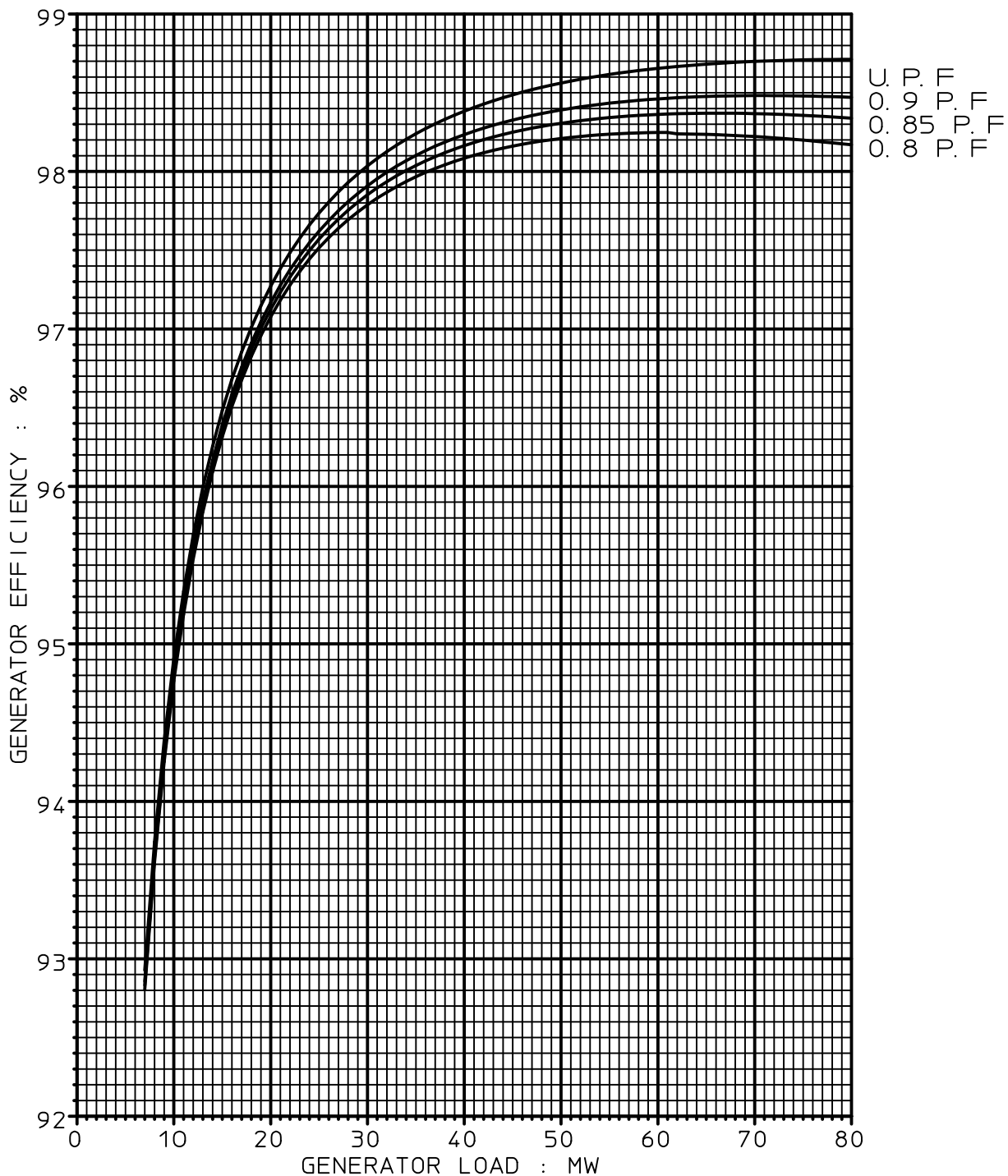
BDAX 72-290ER
13.80KV, 3 Ph, 60Hz.

IN ACCORDANCE WITH
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Up to 1000 meters ASL

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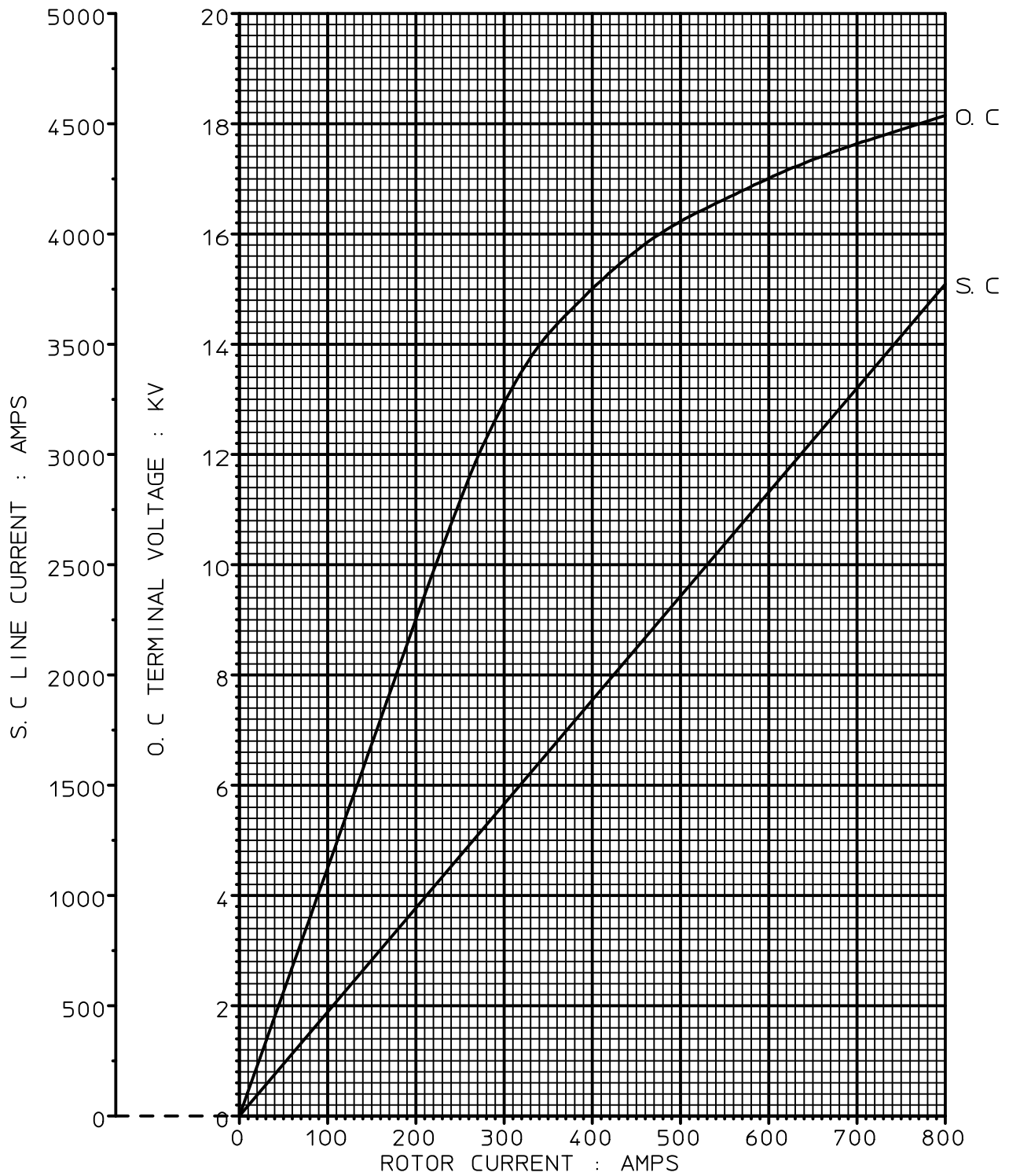
VARIATION OF GENERATOR EFFICIENCY WITH LOAD



BDAX 72-290ER
13.8 KV, 3 Ph, 60 Hz.

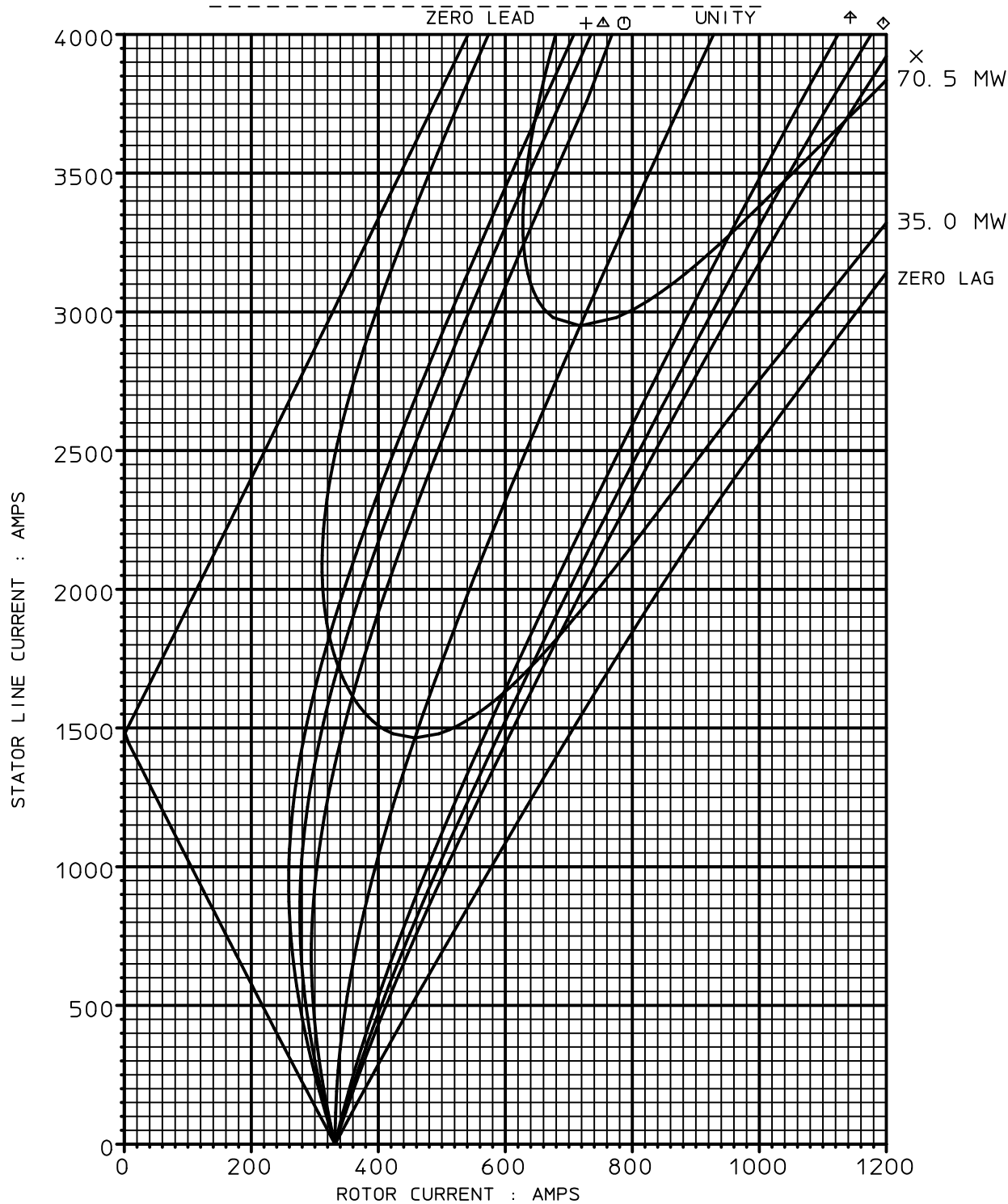
Efficiencies shown are guaranteed
subject to the tolerance
specified in IEC 60034-1.

OPEN CIRCUIT AND SHORT CIRCUIT CHARACTERISTIC



BDAX 72-290ER
3Ph, 60Hz, 3600 RPM.

CALCULATED GENERATOR V-CURVES



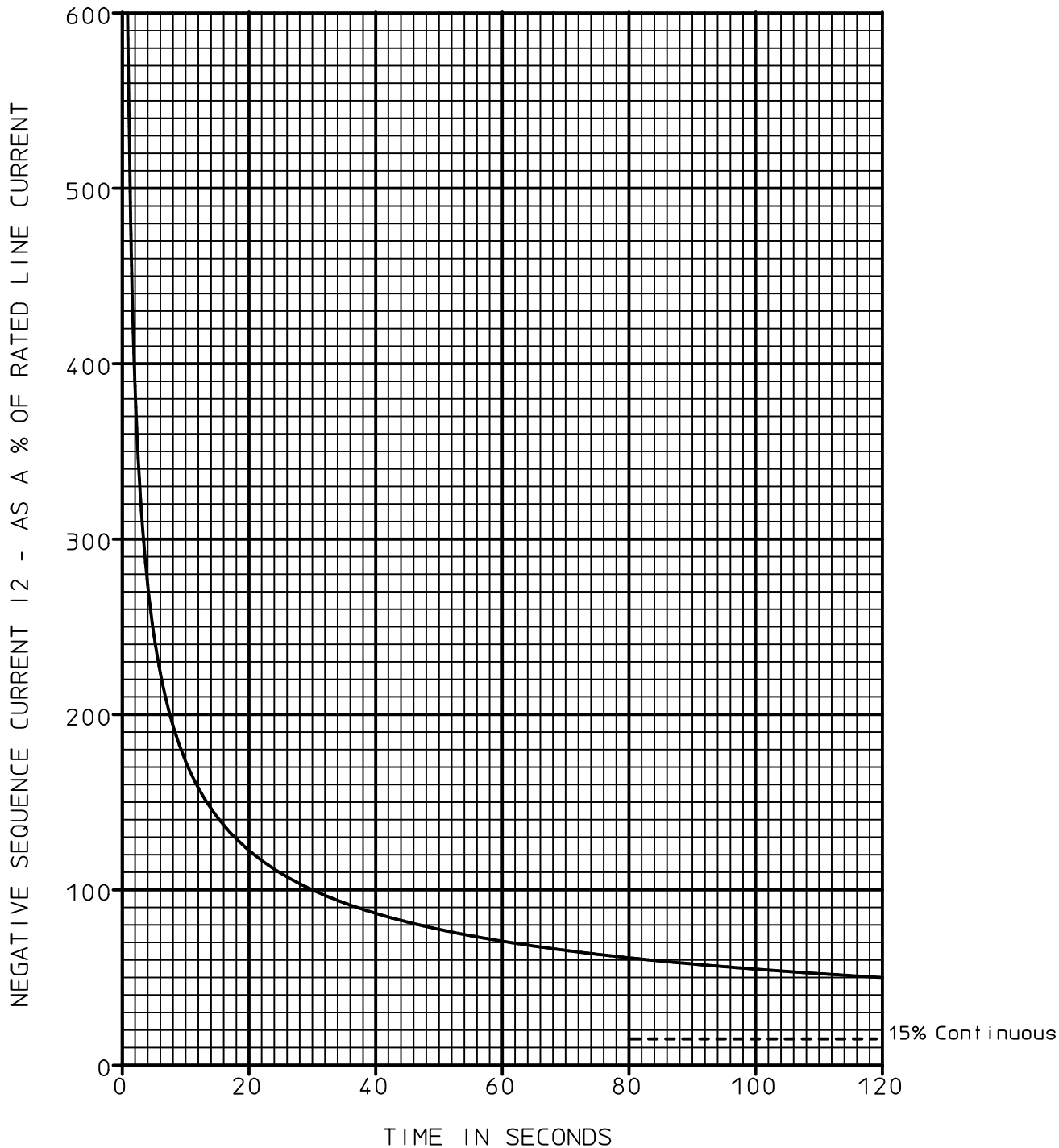
BDAX 72-290ER
13.80KV, 3 Ph, 60 Hz.

KEY TO POWER FACTORS SHOWN

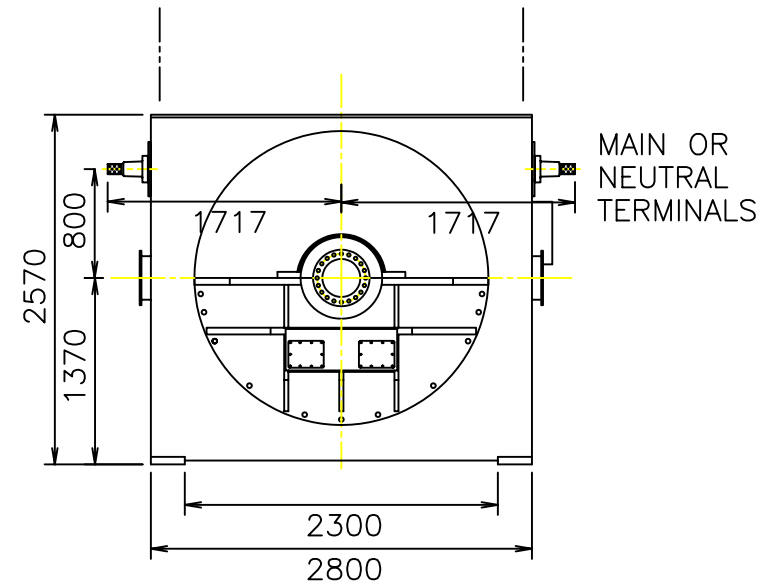
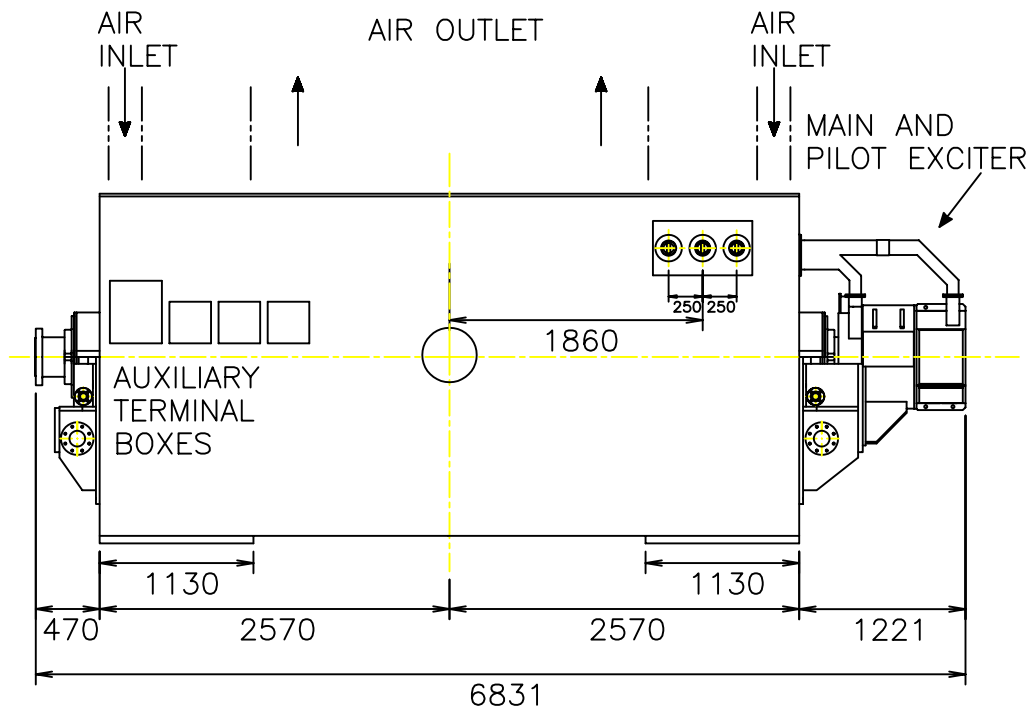
○	-0.90	PF LEAD	◇	-0.85	PF LAG
△	-0.85	PF LEAD	↑	-0.90	PF LAG
+	-0.80	PF LEAD			
X	-0.80	PF LAG			

PERMISSIBLE DURATION OF NEGATIVE SEQUENCE CURRENT

$$\frac{I_2}{I_1} = 30$$



NOTE: For continuous operation rated current must not be exceeded in any one phase.

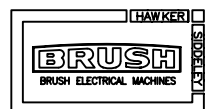


VIEW ON NON EXCITER END

APPROXIMATE WEIGHTS

STATOR = 57120 Kg
 ROTOR AND EXCITER ARMATURE = 14315 Kg
 TOTAL GENERATOR = 77000 Kg

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DATE	28/7/98	DR'N	A NEEDHAM
CIRCULATION			
ADDL PRINTS		N/A	
AUTOSKETCH		NONE	
	SHT 1 OF 1		

TENDER OUTLINE
 BDAX 72-290 ERH

CODE

ET 2183				ISS
				A
SCALE	NTS	DEPT	DAX	
				FIRST ANGLE PROJECTION